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**Education and the Long-Term Earnings of African American and White Men
in the United States***

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September 25, 2014

Word count: 9,387 (including text, footnotes and references)

* Direct correspondence to Arthur Sakamoto at the above address. The views expressed in this paper are those of the authors and do not represent the views of the Social Security Administration (SSA). Access to SSA data linked to the U.S. Census Bureau survey data is subject to restrictions imposed by Title 13 of the U.S. Code. The data are accessible at a secured site and must undergo disclosure review before their release. For researchers with access to these data, our computer programs are available upon request. This research was supported by grants from the Eunice Kennedy Shriver National Institute of Child Health and Human Development of the National Institute of Health (1R03HD073464-01A1) and the Spencer Foundation (201400077).

Education and the Long-Term Earnings of African American and White Men in the United States

Abstract

We investigate long-term earnings differentials between African American and white men using data that matches respondents in the *Survey of Income and Program Participation* to 30 years of their longitudinal earnings as recorded by the Social Security Administration. Our analysis allows for the racial differentials to vary by educational level because the latter is closely related to long-term earnings. The results show that the overall racial disadvantage for African American men is larger for long-term earnings than for annual earnings. After controlling for demographic characteristics, work disability, and indicators of educational achievement, the racial differential is larger at lower levels of education for long-term earnings but not for annual earnings. In general, the distribution of long-term earnings is more unequal among African American men than among white men. Black men without a high school degree appear to have a particularly low level of earnings mobility and a high number of years of zero earnings during their work career. The latter findings are interpreted as being associated with the high level of incarceration among less educated African American men.

Keywords: long-term earnings; racial differentials in earnings; education; Survey of Income and Program Participation; work disability

Table 1. Descriptive Statistics

	White	Black	Gap (Black – White)
30 Year Earnings^a			
Mean	1,669,101	959,300	-709,801
10th percentile	444,177	151,054	-293,123
50th percentile (Median)	1,351,836	814,503	-537,333
90th percentile	2,896,489	1,883,775	-1,012,714
Median: Less Than High School	589,086	292,854	-296,232
Median: High School Graduates	1,090,048	688,870	-401,178
Median: Some College	1,269,421	880,844	-388,577
Median: Bachelor or Higher	1,976,131	1,455,405	-520,726
30 Year Log-Earnings^a			
Total	13.992	13.329	-.663
Less Than High School	12.979	12.345	-.634
High School Graduates	13.720	13.166	-.554
Some College	13.910	13.423	-.487
Bachelor or Higher	14.444	14.066	-.378
Variance: Total	.894	1.418	.524
Variance: Less Than High School	1.644	2.135	.491
Variance: High School Graduates	.817	1.488	.671
Variance: Some College	.694	1.025	.331
Variance: Bachelor or Higher	.654	.589	-.065
Annual Log-Earnings in Year 2000 from PUMS 1% File^b			
Total	10.250	9.786	-.464
Less Than High School	9.623	9.309	-.314
High School Graduates	10.092	9.725	-.367
Some College	10.159	9.897	-.262
Bachelor or Higher	10.786	10.499	-.287
Variance: Total	1.101	1.287	.186
Variance: Less Than High School	1.364	1.589	.225
Variance: High School Graduates	.800	1.111	.311
Variance: Some College	1.039	1.114	.075
Variance: Bachelor or Higher	.925	.739	-.186
Level of Education (%)^a			
Less Than High School	4.6	9.9	5.3
High School Graduates	26.5	34.5	8.0
Some College	35.9	39.9	4.0
Bachelor or Higher	32.9	15.7	-17.2
Work Disability (Ever Received SSA DI Benefit or Self-reported Work Limitation)^a			
Total	13.7	27.1	13.4
Less Than High School	33.4	46.8	13.4
High School Graduates	17.0	28.1	11.1
Some College	15.9	26.7	10.8
Bachelor or Higher			
Sample Size	13,771	1,552	

Notes: ^a. Data source is the IRS-SIPP matched file. ^b. Data source is the 2000 PUMS 1% file.

Table 2. OLS Estimates of the Interaction Effect between Being Black and Level of Education on 30-year Cumulative Log-Earnings over 1982 to 2011, Estimated Using the SIPP-IRS Matched Data

	Model 1 Coeffi (St.Err.)Sig	Model 2 Coeffi (St.Err.)Sig	Model 3 Coeffi (St.Err.)Sig	Model 4 Coeffi (St.Err.)Sig
Control Variables				
Survey Year Dummy	0	0	0	0
Level of Education	0	0	0	0
Age-in-1982, Age-in-1982-squared	0	0	0	0
Work Disability		0	0	0
Demographic Covariates			0	0
Educational Covariates			0	0
Self-Employment			0	0
Years of Zero Earnings				0
Interaction of Black * Education (Ref = Equally Educated White)				
Black * LTHS	-.637 (.150)***	-.517 (.131)***	-.472 (.129)***	-.204 (.063)**
Black * HSG	-.545 (.060)***	-.428 (.048)***	-.429 (.049)***	-.266 (.028)***
Black * SC	-.475 (.048)***	-.371 (.039)***	-.348 (.039)***	-.220 (.024)***
Black * BA+	-.339 (.055)***	-.261 (.048)***	-.228 (.046)***	-.237 (.033)***
R-squared	.213	.374	.425	.690
Sample Size	15,323	15,323	15,323	15,323

Notes: Level of education includes dummies of less than high school, GED, some college, bachelor degree only, and graduate degree setting high school graduate as a reference group. Work disability variables consist of a dummy of self-reported work limitation; a dummy of ever-received Social Security disability benefit (DI or SSI program); age of first reported work limitation or disability; and age of first reception of Social Security disability benefit. Demographic covariates include dummies of never-married; married before age 18; ever-divorced; and born in the South; and number of children. Educational covariates include age of the final degree; dummies of private high school; college preparation courses; advanced math and science courses (i.e., AP courses); STEM major; Business major; and law/medicine major. Self-employment is measured by the number of years with self-employed earnings. Years of zero earnings indicate the number of years with zero earnings over 30 year period between 1982 to 2011.

* < .05; ** < .01; *** < .001 (2 tailed test)

Table 3. OLS Estimates of the Interaction Effect between Being Black and Level of Education on Annual Log-Earnings in 2000, Estimated Using the 2000 PUMS 1% File

	Model 5	Model 6	Model 7
	Coeffi (St.Err.)Sig	Coeffi (St.Err.)Sig	Coeffi (St.Err.)Sig
Control Variables			
Level of Education	0	0	0
Age, Age-squared	0	0	0
Work Disability		0	0
Demographic Covariates			0
Self-Employment			0
Interaction of Black * Education			
(Ref = Equally Educated White)			
Black * LTHS	-.389 (.021)***	-.375 (.021)***	-.270 (.021)***
Black * HSG	-.380 (.013)***	.362 (.013)***	-.284 (.012)***
Black * SC	-.330 (.012)***	-.313 (.012)***	-.256 (.012)***
Black * BA+	-.328 (.014)***	-.315 (.014)***	-.265 (.014)***
R-squared	.162	.167	.215
Sample Size	242,802	242,802	242,802

Notes: Samples are limited to those who are born in 1949 to 1964 (age 36 to 51 in 2000); reported positive earnings in 2000; and non-Hispanic single race US-born whites and blacks. Level of education includes dummies of less than high school, some college, bachelor degree only, and graduate degree. Work disability variable is a dummy of self-reported work limitation. Demographic covariates include dummies of marital status, birth states, and dummies of region of current residence. Self-employment is measured by a dummy variable.

* < .05; ** < .01; *** < .001 (2 tailed test)

Table 4. OLS Estimates of the Interaction Effect between Being Black and Level of Education on 10-year Cumulative Log-Earnings over Three Time Periods: (1) 1982 to 1991; (2) 1992 to 2001; and (3) 2002 to 2011, Estimated Using the SIPP-IRS Matched Data

	Period I: 1982 to 1991	Period II: 1992 to 2001	Period III: 2002 to 2011
	Coeffi (S.E.)Sig	Coeffi (S.E.)Sig	Coeffi (S.E.)Sig
Model 8: Interaction of Black * Education			
Control Variables: Level of Edu, Age-in-1982 (Ref = Equally Educated White)			
Black * LTHS	-.558 (.154)***	-.630 (.165)***	-.572 (.195)**
Black * HSG	-.488 (.061)***	-.518 (.054)***	-.562 (.084)***
Black * SC	-.470 (.045)***	-.523 (.054)***	-.504 (.066)***
Black * BA+	-.322 (.057)***	-.358 (.062)***	-.420 (.091)***
R-squared	.190	.187	.155
Sample Size	15,264	15,116	14,647
Model 9: Interaction of Black * Education			
Control Variables: Controls of Model 5 + Work Disability (Ref = Equally Educated White)			
Black * LTHS	-.492 (.140)**	-.518 (.147)**	-.493 (.174)**
Black * HSG	-.420 (.054)***	-.428 (.048)***	-.450 (.074)***
Black * SC	-.408 (.041)***	-.428 (.051)***	-.376 (.058)***
Black * BA+	-.275 (.055)***	-.281 (.056)***	-.300 (.084)**
R-squared	.259	.304	.307
Sample Size	15,264	15,116	14,647
Model 10: Interaction of Black * Education			
Control Variables: Controls of Model 6 + Demographic and Educational Covariates + Self Emp (Ref = Equally Educated White)			
Black * LTHS	-.459 (.137)**	-.487 (.148)**	-.474 (.172)**
Black * HSG	-.437 (.057)***	-.424 (.047)***	-.451 (.074)***
Black * SC	-.400 (.041)***	-.392 (.050)***	-.353 (.059)***
Black * BA+	-.266 (.053)***	-.235 (.051)***	-.244 (.083)**
R-squared	.300	.355	.346
Sample Size	15,264	15,116	14,647

Notes: Samples are limited to those who reported positive earnings over each 10 year period. Sample sizes vary by these periods because the number of respondents who reported positive earnings is different by period. The model specifications of Models 8, 9, and 10 is identical with those of Models 1, 2, and 3 of Table 2 respectively. Model 1 controls for level of education and age-in-1982 and its squared form; Model 2 adds disability variables in addition to the control of model 1; and Model 3 additionally control for demographic and educational covariates as well as self-employment. Level of education includes dummies of less than high school, GED, some college, bachelor degree only, and graduate degree setting high school graduate as a reference group. Work disability variables consist of a dummy of self-reported work limitation; a dummy of ever-received Social Security disability benefit (DI or SSI program); age of first reported work limitation or disability; and age of first reception of Social Security disability benefit. Demographic covariates include dummies of never-married; married before age 18; ever-divorced; and born in the South; and number of children. Educational covariates include age of the final degree; dummies of private high school; college preparation courses; advanced math and science courses (i.e., AP courses); STEM major; Business major; and law/medicine major. Self-employment is measured by the number of years with self-employed earnings over each 10 year period.

* < .05; ** < .01; *** < .001 (2 tailed test)

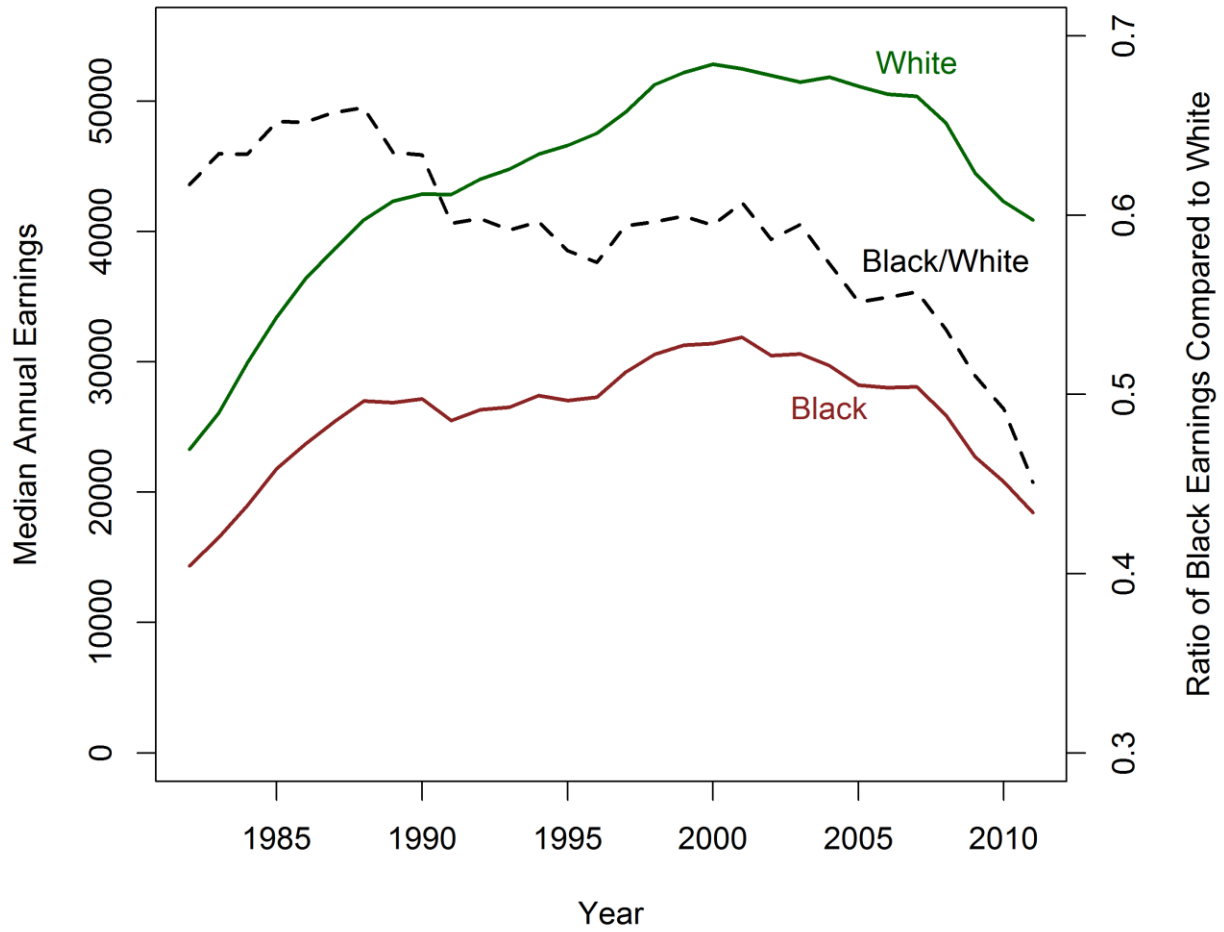
Table 5. OLS and Treatment-Effect-Model Estimates of the Interaction Effect between Being Black and Level of Education on 30-year Cumulative Log-Earnings over 1982 to 2011 Using Limited Samples, Estimated Using the SIPP-IRS Matched Data

	Model 11 OLS Using Samples who reported 29 or 30 Years of Positive Earnings	Model 12 OLS Using Samples Excluding Ever Disabled	Model 13 OLS Using Samples Excluding Those Who Disabled before Age 30	Model 14 Treatment-effect-model Using Samples Excluding Those Who Disabled before Age 30
	Coeffi (St.Err.)Sig	Coeffi (St.Err.)Sig	Coeffi (St.Err.)Sig	Coeffi (St.Err.)Sig
Control Variables				
Survey Year Dummy	0	0	0	0
Level of Education	0	0	0	0
Age-in-1982, Age-in-1982-squared	0	0	0	0
Work Disability	0	0	0	0
Demographic Covariates	0	0	0	0
Educational Covariates	0	0	0	0
Self-Employment	0	0	0	0
Interaction of Black * Education (Ref = Equally Educated White)				
Black * LTHS	-.190 (.077)*	-.364 (.176)*	-.520 (.138)***	-.486 (.068)***
Black * HSG	-.260 (.030)***	-.434 (.047)***	-.426 (.048)***	-.408 (.035)***
Black * SC	-.185 (.029)***	-.330 (.042)***	-.354 (.041)***	-.368 (.033)***
Black * BA+	-.166 (.036)***	-.242 (.043)***	-.233 (.046)***	-.253 (.051)***
ρ				.042 (.028)
σ				.736 (.004)***
λ (Inverse Mills Ratio)				.031 (.021)
LR Test of H0: $\rho = 0$				2.30
R-squared	.350	.288	.384	
Log Likelihood				-22,147 ***
Sample Size	10,228	12,991	15,063	15,063

Notes: Level of education includes dummies of less than high school, GED, some college, bachelor degree only, and graduate degree setting high school graduate as a reference group. Work disability variables consist of a dummy of self-reported work limitation; a dummy of ever-received Social Security disability benefit (DI or SSI program); age of first reported work limitation or disability; and age of first reception of Social Security disability benefit. Demographic covariates include dummies of never-married; married before age 18; ever-divorced; and born in the South; and number of children. Educational covariates include age of the final degree; dummies of private high school; college preparation courses; advanced math and science courses (i.e., AP courses); STEM major; Business major; and law/medicine major. Self-employment is measured by the number of years with self-employed earnings. The 1st stage equation (i.e., the estimation of the probability of disability) of the treatment-effect-model controls for 50 dummies indicating state of birth; received welfare before age 30; received food stamp before age 30 and studied industrial shop or auto mechanics after high school, in addition to level of education; race; race*education; demographic and educational covariates.

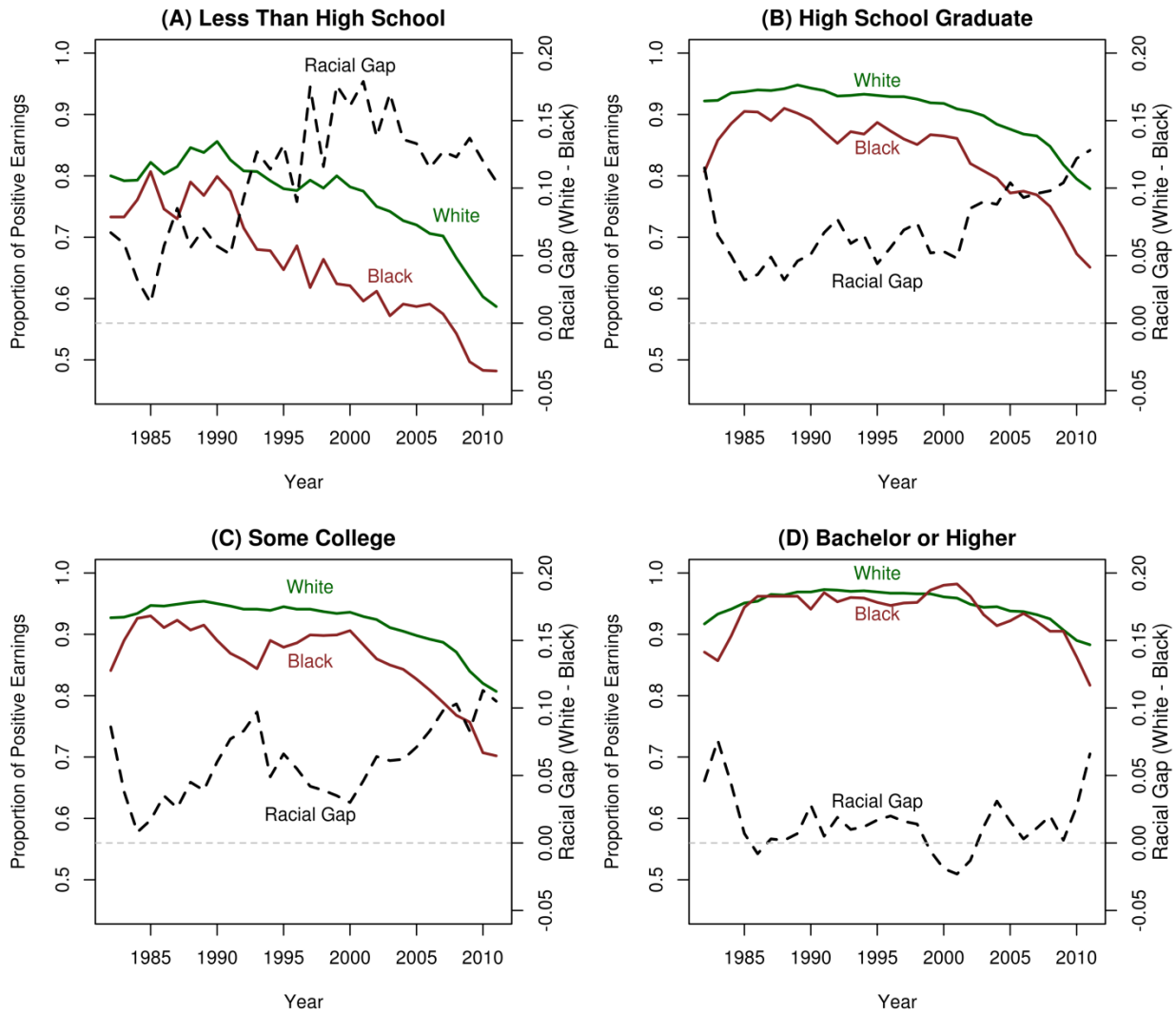
* < .05; ** < .01; *** < .001 (2 tailed test)

Figure 1. Median Annual Earnings Trajectory For the Cohort Who Are Born in 1949 to 1964



Notes: Samples are limited to those who reported positive 30-year cumulative earnings. The left-side Y-axis indicates White and Black annual earnings, and the right-side Y-axis indicates the ratio of black earnings compared to white earnings.

Figure 2. The Proportion of Population who Reported Positive Annual Earnings by Race and by Level of Education



Notes: Samples are limited to those who reported positive 30-year cumulative earnings. The left-side Y-axis indicates the proportion of population who reported positive annual earnings, the right-side Y-axis indicates the difference between white and black (i.e., the proportion of white – the proportion of black).